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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

HU, SHOUXIANG

ART UNIT PAPER NUMBER

2811

DATE MAILED: 11/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/727,945

Applicant(s)

AHLGREN ET AL.

Examiner

Shouxiang Hu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 14-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 20031204.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 14-28 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on August 31, 2004.

Claim Objections

2. Claims 1-13 are objected to because of the following informalities and/or defects:

Claim 1 recites the term of "aligned"; but it fails to definitely define which edge from which first layer is aligned with which edge from which second layer along which direction, as the word "align" may have very broad meanings, including: (A) To arrange in a line or so as to be parallel; (B) To adjust to produce a proper relationship or orientation (such as: aligning the wheels of a truck); or (C). To ally (oneself, for example) with one side of an argument or cause, according to The American Heritage® Dictionary of the English Language, Third Edition copyright © 1992 by Houghton Mifflin Company

In addition, claim 1 recites the term of "a second silicide layer located in the block polysilicon emitter region", but according to the specification and the drawings, the second silicide layer (see layer 45 in Fig. 2H) is instead located on the polysilicon emitter region (36).

Claim 2 recites the term of "a polysilicon emitter", but fails to clarify what is its relationship with the "block polysilicon emitter region" already defined in claim 1.

Regarding claim 3, it is noted that the second silicide layer (45) is not a polysilicon and is located on, instead of "inside", the block polysilicon region. And, claim 3 also fails to clarify the relationship between the term of "a conformal polysilicon emitter" and the term of the "block polysilicon emitter region" already defined in claim 1.

Claim 7 recites subject matters that are not all readable on the elected species of Figs. 2A-2H.

In claim 9, "directed" should read as: ---directly--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-11, as being best understood in view of the claim objections above, are rejected under 35 U.S.C. 102(e) as being anticipated by Kalnitsky (US 6,767,798).

Kalnitsky discloses a bipolar transistor (Figs. 2-3I), comprising: a base region comprising an intrinsic base region (42) and surrounding raised extrinsic base regions

(44; polysilicon); a block polysilicon emitter region (34; polysilicon) located atop and in contact with the intrinsic base region; a first silicide layer (52) located on the raised extrinsic base region and having an inner edge that is aligned to the block polysilicon emitter region in the sense that the inner edge of the first silicide layer (52) and the upper corner of the block polysilicon emitter are both aligned along the edge of the spacer (40); a second silicide layer (36) located on the block polysilicon emitter region and aligned to the first silicide layer in the sense that they both aligned along the edge of the spacer (40) and/or have parallel top sides; an emitter contact border (40) located atop the raised extrinsic base region; and base and emitter contacts (38).

Furthermore, it is noted that limitations regarding "self" in the term of "self-aligned" as recited in the above claims are process limitations, these would not carry patentable weight in this claim drawing to a structure, because distinct structure is not necessarily produced. In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985).

Regarding claim 8, the spacer (40) in Kalnitsky further includes a sub-spacer (132; see Fig. 3F).

Regarding claim 10, the emitter contact in Kalnitsky has a dimension that is larger than the bottom width of block polysilicon emitter region.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 12 and 13, as being best understood in view of the claim objections above, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalnitsky in view of Ohnishi (US 6,399,993).

The disclosure of Kalnitsky is discussed as applied to claims 1-11 above.

Although Kalnitsky does not expressly disclose that the device can further include a silicided collector and a collector contact, one of ordinary skill in the art would readily recognize that such collector contact structure is commonly desirable for forming a low resistance collector connection on the top side, as evidenced in Ohnishi (see the collector region 4 underlying the silicide region 27 and the collector contact 34 in the cover page figure).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the collector contact structure of Ohnishi into the bipolar device of Kalnitsky, so that a bipolar transistor with low resistance collector connection on the top side would be obtained.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References C-F cited as being related to a bipolar transistor structure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is 571-272-

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1654. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SH
November 8, 2004



SHOUXIANG HU
PRIMARY EXAMINER